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■

EVALUATION OF BENEFICIAL CONTRIBUTIONS TO NATIONAL ECONOMIC DEVELOPMENT FOR FLOOD PLAIN MANAGEMENT PLANS

General Principles and Standards of Benefit Evaluation

Title 33—Navigation and Navigable Waters

CHAPTER II—CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY

[ER 1105-2-351]

PART 341—EVALUATION OF BENEFICIAL CONTRIBUTIONS TO NATIONAL ECONOMIC DEVELOPMENT FOR FLOOD PLAIN MANAGEMENT PLANS

General Principles and Standards of Benefit Evaluation

On August 15, 1974, Part 341 was established with the publication of guidelines by which the Corps of Engineers evaluates economic benefits for flood control projects. At that time, work was continuing on procedures for application of the "affluence factor" in determining future flood reduction benefits. The "affluence factor" is defined as the effect of increasing per capita income on the unit value of stock of real property and contents.

The amendments to Part 341 published this date include the following: a revision of Subpart A to include the applicability provisions of the entire regulation and to revise the section on definitions to reflect the expanded scope of the regulation with the affluence factor; several editorial corrections; a new Subpart E (§§ 341.50–341.53) prescribing procedures for application of the affluence factor; and a renumbering of the previous Subpart E to Subpart F to maintain a logical sequence to the regulation. Following the regulation are two appendixes which provide results of studies conducted by the Office of the Chief of Engineers in the formulation of the affluence factor procedures.

Questions concerning these amendments may be referred to Headquarters, Department of the Army, Office of the Chief of Engineers, ATTN: DAEN–CWP, Washington, D.C. 20314. This regulation is issued within the Corps of Engineers as ER 1105–2–351.

(Flood Control Act of 1936, Pub. L. 74–738 (33 U.S.C. 701a), June 22, 1936; Water Resources Council, Principles and Standards for Planning Water and Related Land Resources, 38 FR 24778–24869, September 10, 1973.)

Dated: June 9, 1975.

RUSSELL J. LAMP,
Colonel, Corps of Engineers Executive.

1. Part 341 of Title 33, Code of Federal Regulations, is amended by revising the title to: Evaluation of Beneficial Contributions to National Economic Development for Flood Plain Management Plans.

2. Part 341, Subpart A is revised to read as follows:

Subpart A—Introduction

Sec.
341.10 Purpose.
341.11 Applicability.
341.12 References.
341.13 Code of Federal Regulations.
341.14 Effective dates.
341.15 Applicability to planning reports.
341.16 Definitions.

§ 341.10 Purpose.

This regulation prescribes the principles, standards, procedures, and measurement techniques for evaluating beneficial contributions to the National Economic Development (NED) objective for flood plain management plans.

§ 341.11 Applicability.

This regulation is applicable to all OCE elements and all field operating agencies with Civil Works responsibilities.

§ 341.12 References.

(a) Section 1, Pub. L. 74–738, Flood Control Act of 1936 (33 U.S.C. 701a), 22 June 1936.

(b) Water Resources Council, Principles and Standards for Planning Water and Related Land Resources, 38 ER 24778–24869, September 10, 1973.

(c) Pub. L. 93–234, Flood Disaster Assistance Act of 1973 (87 Stat. 975), December 31, 1973.

(d) 24 CFR Part 1910, Criteria for Land Management and Use.

§ 341.13 Code of Federal Regulations.

This regulation is codified as 33 CFR Part 341.

§ 341.14 Effective date of regulation.

This regulation, with the exception of Chapter 5, was effective August 15, 1974, as published in the FEDERAL REGISTER on that date, and amended on June 13, 1975. Subpart E is effective June 13, 1975, as published in the FEDERAL REGISTER on that date.

§ 341.15 Applicability to planning reports and projects.

(a) *Planning Reports.* This regulation is applicable to reports transmitted to the Chief of Engineers after June 13, 1975, as provided in paragraphs (a)(1)–(a)(4) of this section. Separate instructions will be issued regarding applicability to reports transmitted to the Chief of Engineers on or before June 13, 1975.

(1) Preauthorization feasibility reports transmitted to the Chief of Engineers by the Board of Engineers for Rivers and Harbors after June 13, 1975.

(2) Phase I General Design Memoranda transmitted to the Chief of Engineers by the Board of Engineers for Rivers and Harbors, or by Division Engineers, after June 13, 1975.

(3) Postauthorization Change reports transmitted to the Chief of Engineers after June 13, 1975.

(4) Detailed Project Reports (DPR's) under the Continuing Authorities Program transmitted to the Chief of Engineers for approval after June 13, 1975.

(b) *Projects.* The Chief of Engineers will issue separate instructions regarding special reporting requirements to apply the provisions of this regulation to the following categories of projects, if not reported under paragraph (a) of this section.

(1) Projects authorized by Congress for which funds to initiate construction are not appropriated prior to FY 1977.

(2) Projects approved by the Chief of Engineers under the Continuing Authorities Program for which funds are not allotted for initiation of construction prior to FY 1977.

(c) *Other.* This regulation may be applicable to other special studies or projects, as deemed appropriate by the Chief of Engineers. Questions regarding applicability should be referred to HQDA (DAEN–CWP) WASH D C 20314.

§ 341.16 Definitions.

"Activity." Any firm, household or public service entity, be it governmentally sponsored, private, profit making, quasi-public, charitable, etc., sometimes used in text to mean all activities of a similar type; (e.g. residential, agricultural, manufacturing, or commercial.)

"Activity decisions." A choice by an activity based upon maximization of its net income.

"Affected area." The area affected by a proposed plan is the flood plain plus other areas likely to serve as alternate sites for activities which might use the flood plain if it were protected.

"Affluence factor." The effect of increasing per capita income on the unit value of the stock of real property and contents. The affluence factor evaluation procedure is applied only to the value of contents per residential unit. It does not apply to increases in the value of total stock due to an increased number of units.

"Alternative site, available alternative, alternative location." (a) Broadly, any location where a given activity might locate outside of the flood plain; (b) specifically, the best available non-flood plain location at a given point in time, as measured by maximization of net income to the activity. As a rule the site is not available if it is already occupied by a similar activity type or it will be occupied by a similar activity type both with and without the project. If an already occupied site is to be considered as the alternative, the costs of moving, including any unrecovered sunk costs, lost interest and profits during moving and any diseconomies to employees must be fully accounted for. As a practical matter, these costs will usually preclude use of occupied sites unless the useful life of the structures is near zero.

"Analog area." An area chosen as a substitute to the flood plain due to the undeveloped status of the flood plain. The analog area selected must have similar characteristics to the specific flood plain under study.

"Associated costs." The cost necessary to make one site equally valuable as another. Value is measured either as gross income (revenues) or as other total output for non-monetary activities, such as schools.

"Average annual flood damages." See "Flood Damages".

"Base year." The first year in which the plan is expected to become operational.

"Benefit." An NED benefit means an increase in the Nations' output of goods and services and/or an improvement in economic efficiency caused by a project. NED benefits are categorized according to their effect on activity decisions as inundation reduction benefit, location benefit, or intensification benefit.

"Benefit standard." The willingness of users (benefiting activity) to pay for a proposed plan.

"Benefiting activity." An activity which realizes an increase in net income because of a proposed plan.

"Comparative advantage." Those specific advantages which enable an area to be preferable to alternative areas. Same as locational advantge.

"Commercial." A general property category which includes retail, wholesale, distribution, warehousing, office and professional buildings, etc.

"Competitive position." The relative position which a property occupies in the market place because of its locational advantage.

"Content value." The value of property situated within a structure which is not part of the structure. In residences, this would include personal property within the structure not affixed to the structure. In commercial, public and semipublic, this would include inventory, fixtures, equipment and supplies. In industrial, machinery, raw material and finished product inventories, fixtures, equipment and supplies would be included.

"Costs." The amount expended by an activity in order to generate output, normally excluding the rental value of the land. In this regulation, costs usually segregate those due to flood damages in order to facilitate analysis. However, flood damages are conceptually a cost of doing business (Note, project "costs" are a separate item, EM 1120–2–104).

"Damage susceptibility." The relationship between total value of a type of activity in a flood plain and the flood damages sustained by that activity. The relationship is a function of the characteristics of the flooding itself (depth, velocity, duration, etc.) and the objects flooded (dwelling, materials, etc.), and their location.

"Damages." Often used in text to mean flood damages reduced.

"Damages reduced". Often used in text to mean flood damages reduced.

"Depreciation." A loss from the upper limit of value. An effect caused by deterioration and/or obsolecence. Deterioration is reflected by wear and tear, decay or structural defects, obsolescence occurs in two forms; functional and economic.

"Development costs." The cost of preparing land for use by and activity (site development costs) plus, when applicable, cost necessary to make one site as valuable as another (associated costs). The difference in development costs is a component of changed net income.

"Durable good." A piece of equipment, for either consumers or producers that in normal use is likely to last longer than three years.

"Economic benefit." Synonymous with benefit, for purpose of the economic development objective.

"Economic development objective." The objective of increasing value of the Nation's output of goods and services and improving national economic efficiency.

"Economic efficiency." The objective of producing goods and services at the lowest possible cost per unit of output for a given level of output.

"Economic rationality." The assumption that activities having full knowledge of the flood hazard will attempt to maximize returns, and will not externalize their flood losses.

"Efficiency." Synonymous with economic efficiency for purposes of the economic development objective.

"Equivalent annual flood damages." The amortized value of the cumulative present worth values of the undiscounted flood damages sustained. The estimated flood damages sustained are brought to present worth effective in base year and then amortized over the entire project life. The two categories of damages are: Damages under existing conditions and damages under future conditions.

"Exceedence frequency (frequency of flooding)." The percentage of values that exceed a specified magnitude, and occur as the most extreme event within specified sequential time periods; the exceedence probability times one hundred. A 100 year exceedence interval corresponds to an exceedence frequency of 1.00.

"Exceedence interval (of flooding)." Also, sometimes the less desirable terms, recurrence interval and/or return period have been used. The average interval of time between values that exceed a specified magnitude; reciprocal of the exceedence frequency per 100 years. In an annual flood series, the average interval in which a flood of a given size is exceeded as an annual maximum. In a partial duration series, the average interval between floods exceeding a given size regardless of their relationship to any period of time. It should be noted that a flood corresponding to a 100 year average exceedence interval is *not* expected to be equaled only once during a 100 year period. A 100 year exceedence interval flood magnitude can be expected to be exceeded one or more times one out of four periods of 30 years length, one out of two periods of 70 years length and about two out of three periods of 100 years length. The total period of time under consideration must exceed 1,000 to 10,000 years before the 100 year exceedence interval flood magnitude can be expected to be exceeded on an average of once for each 100 years.

"Existing benefits (and damages)." Average annual benefits (and damages) to activities affected by flooding at the time the study is completed.

"Exceedence probability (probability of flooding)." A probability that an event selected at random, the most extreme event within each sequential time period of a specified length, will exceed a specified magnitude. A 100 year exceedence interval corresponds to an exceedence probability of 0.01.

"Externality." Synonymous with external effect. An effect on parties other than users of the outputs of a plan; specifically, increased damages to activities outside the protected area under the with—as compared to the without—condition.

"Flood." Inundation arising from stream overflow, overland water flow, high lake stages, high tides and inadequate drainage plus stream related erosion, gullying, flood plain scouring, streambank cutting, shore or beach erosion and sedimentation.

"Flood characteristics." The physical characteristics of floods includes: stage frequency, duration, concentration, intensity, velocity, debris and silt load.

"Flood control project." An identified controlled structural or nonstructural solution to minimize flood damages; a synonym for a flood-plain management plan.

"Flood damages." (a) Broadly, damages caused by a flood; (b) often "flood damages" mean "average annual damages." Floods vary in size and frequency. Average annual damages are yearly damages, on average, at any point in time, assuming one set of conditions and are independent of the interest rate used for project evaluation; (c) flood damages are a cost of doing business; reduction of the damage is therefore a reduction in costs which contributes to economic efficiency (synonymous with inundation damages). These include: physical damages, business and/or financial losses and emergency costs.

"Flood damages prevented." Existing and future flood damages expected without a flood control plan less residual damages experienced with a plan in place.

"Flood damages reduced." Synonym for flood damages prevented.

"Flood plain." Land physically inundated by a flood. Flood plains are usually specified for a flood of a given frequency such as a 100-year frequency flood.

"Flood plain management plan." A plan for responding to the adverse effects of flooding (flood). The plan may envision structural measures, flood proofing, zoning, management, no response or a combination. This regulation provides for choosing plans on the basis of the economic development objective.

"General property type." A classification of real property by type of land use. This classification includes: Residential, commercial, industrial, public, semipublic, recreational and agricultural.

"Gross income." Total return to an activity. Usually expressed in dollars (synonym for gross or total revenues). Gross income, less costs, rent, and flood damages, equals net income for a given activity.

"Index." The relation or proportion of one amount to another; an indicator, e.g., density is an index of urbanization. The proper choice and use of an index is often critical to the accuracy of projections. Therefore, use of one item to indicate changes in another item should be based upon (a) establishing an empirical relationship between the two items; (b) confirming a logical relationship between the two items, and (c) determining the likelihood that the relationships will continue over time and the nature of possible variances.

"Industrial." A general property classification including properties on which industrial output is generated.

"Infrastructural locational advantage." See "locational advantage".

"Intensification benefit". Benefit which arises because a plan or project induces

an activity to modify its operation on the flood plain.

"Intensification of land use." An increase in the gross output of an existing activity at an existing site, due to a change in the factors of production.

"Inundation reduction benefit." The flood control benefit to those activities whose location decision are unaffected by a proposed plan. It is the value of those flood losses prevented to those activities which would use the flood plain even without the proposed plan.

"Inundation damages." Synonym for flood damages.

"Land use." A description as to how land is utilized within the affected area. A change in land use is based upon affected area requirements and the ability of the flood plain to better meet these requirements given various levels of protection. A major source and starting point are land use maps, with support data, determined by responsible local, regional and Federal agencies. The detail number of levels of protection and number of years land use need be projected will vary with the plans being considered and the area being studied. The level of detail should be based upon the criteria of whether formulation and justification are affected.

"Locational advantage." For any given demand for land, the desirability one parcel of land may possess over another; an advantage may be physical, aesthetic, infrastructural or a combination thereof. The former includes slope, foundation, potential for flooding, availability of water; infrastructural locational advantages are primarily psychological, such as nearness to existing population, accessibility to highways, civil stability, and proximity to market. Most physical advantages do not change significantly over time and are generally measured in terms of site development costs or in terms of hazard damage sustained. Infrastructural advantages will change over time as an area develops, depreciates or redevelops. It is most difficult to quantify infrastructural advantages. Measuring associated costs is one way, where it is possible to make two parcels of land equivalently valuable for an activity by a measurable expenditure (e.g., by putting in a road, by evaluating commuter costs between two sites, etc.). Where this is not possible, a direct estimate of the value of the location may be made. A starting point is to state the advantage(s) quantitatively; e.g., water supply available. A second step would be to attempt to measure the market value of comparable land and activities with and without the advantage. The purpose is to isolate unique advantages. Interviews with experts may also be helpful. Where the infrastructural advantage cannot be measured either directly or by associated development costs, the advantage should be listed qualitatively by the reporting planner.

"Location benefit." Changes in net income to those activities whose decisions as to where to locate are affected by the proposed plan.

"Market value." The amount of money deemed to be equivalent in worth to the property under appraisal. See also "value".

"Net value." For firms, the difference between the gross income and costs (or expenses). For households or public service activities, the difference between the value (market or simulated) of the good or service supplied and the alternative cost of providing that same service. The difference is net income for users and is the benefit attributable to a flood control project. It is emphasized that net income merely defines the benefit; it does not indicate how the benefit is to be measured. Costs exclude land rent except when specified otherwise in the regulation.

"Net stock." Estimated value of the total (gross) stock less depreciation.

"Objective." The long-term planning horizon which is used as the basis to measure potential project benefits. The two recognized objectives are national economic development and environmental quality.

"Period of analysis." The period of analysis is that time horizon over which needs shall be assessed and is the basis for the NED benefit-cost ratio. The period of analysis is 100 years for major reservoirs, mainline agricultural levees, major long-term urban protection, and hurricane protection plans. It is 50 years for all other flood control measures.

"Physical locational advantage." See "locational advantage".

"Plan." See "flood plain management plan".

"Productivity." (a) The ability to produce or increase output; (e.g.) normally expressed as a rate of output over time; (b) economic efficiency.

"Profit." Synonymous with net income, as used in this regulation.

"Project." See "flood control project".

"Protection." A measure of the level of a flood protection or plan generally measured by the exceedence frequency protected against (e.g., Standard project protection, 50-year protection).

"Public." A category of general property including civic centers, court houses, schools, military bases, park facilities and other owned by the public jurisdiction.

"Rationality." See "economic rationality".

"Real property." This includes land and structure but not contents.

"Rent." The value to, or the amount paid, a landowner for use of his raw land; a component of location benefit. Economic rent equals the net income of the occupying activity.

"Remaining flood damages." Flood damages which will occur even with a flood plain management plan.

"Residential." A category of general property. This category includes single family and multi-family residences, owned by the residents individually or cooperatively, by corporations, by government agencies or landlords.

"Semipublic." A category of general property including churches, temples, clubhouses, etc. open to membership and not owned by the public jurisdiction.

"Sensitivity analysis." The calculation of the rate of change of the objective function with respect to a particular parameter. An analysis of the components of a plan based upon alternative assumptions and/or projections to determine if a change in a measure would appreciably affect plan choice, design or schedule.

"Site operating costs." The costs of operating a given activity on a given parcel of land. The difference is a component of location advantage.

"Standard project flood." A large and improbable flood, usually simulated by placing the largest storm of record in a given region over a specific basin or subbasin.

"Structural value." The market value of structural improvement such as a house. This includes all items considered to be affixed to the structure. The structural value excludes the value of the land.

"Threshold level." For a given activity and year, the protection level at which the activity is indifferent to locating on or off the flood plain. The activity is indifferent when net incomes, on and off the flood plain, are equal. Threshold levels are crucial to location benefit measurement and to land use analysis.

"Uneconomic." An event which is not economically rational.

"Unit flood damages." The amount of flood damage per structure.

"User." Synonym for benefiting activity.

"Value." In this regulation, value means market value; i.e., what a willing buyer will pay a willing seller for a good or service assuming full knowledge by both parties of the pertinent market characteristics of the good or service. The market may be simulated.

"Willingness to pay." The benefit standard for National Economic Development benefits attributable to a flood plain management plan.

"With project condition." The condition of having a specific flood plain management plan in effect.

"Without project condition." The condition of not having a specific flood plain management plan in effect. It is described in terms of what is most likely to occur within an area under evaluation without the specific action, regardless of sponsorship. The enforceable provisions of zoning and the Flood Insurance Act would be recognized under this condition.

"Zoning." Authoritative restriction of uses to which land may be put. A form of land use regulation.

Subpart C—Evaluation Procedure

3. In Part 341, Subpart C, § 341.30(c)(2) is amended by revising the third sentence by replacing the words "first floor" with the words "lowest floor (including basement)".

4. In Part 341, Subpart C, § 341.30(f) is amended by revising the first sentence to read as follows:

(f) The period of analysis is 100 years for major reservoirs, main line agricultural levees, major long-term urban protection, and hurricane protection plans. It is 50 years for all other flood control measures. The period of analysis is the time horizon over which needs shall be assessed and is the basis for the NED benefit-cost ratio.

5. In Part 341, Subpart C, § 341.30(h) is revised to read as follows:

(h) *Benefit display.* Benefits shall be displayed in undiscounted average annual values for the current (existing) year, the base year (project year 1), and by decade to year fifty. Account will be taken of projected hydrologic, demographic, and economic changes. This does not mean that detailed analysis must be done for each tenth year. Detailed analysis will be done for one or at most two years other than the existing year; e.g., the year for which a local master plan exists, or the year of ultimate development. Other 10-year points (to year 50) will be interpolated or extrapolated. In no event will average future hydrologic conditions be applied to existing or ultimate economic conditions.

6. In Part 341, Subpart C, § 341.31(c)(4) is amended to add the words "Standard Project Flood (SPF)" to the second sentence, to read as follows:

(c) * * *

(4) *Existing activities.* The inventory of the flood plain will include a list of existing activities, the number of acres, and density of each. The total acreage of the Standard Project Flood (SPF) flood plain should thus be accounted for; vacant or unused acreage should be separately categorized.

7. In Part 341, Subpart C, § 341.32 is amended by deleting the fifth sentence, beginning with the words "If deliberate * * *" and ending with the words "* * * to be irrational."

Subpart D—Benefit Measurement

8. In Part 341, Subpart D, § 341.42 is amended to read as follows:

§ 341.42 Measurement and projection of physical flood losses.

* * * * *

(b) Value per physical unit. See §§ 341.50–341.54.

9. Part 341, Subpart E, is renumbered to Subpart F, with the following renumbering of sections:

Old number:	*New number*
341.50	341.60
341.51	341.61
341.52	341.62
341.53	341.63

10. Part 341 is revised to include the following new Subpart E:

Subpart E—Evaluation of Future Urban Inundation Reduction Benefits

§ 341.50 Purpose.

The purpose of this subpart is to provide rationale and procedures to estimate future urban inundation reduction benefits, including guidance for evaluating changes in unit residential damages caused by changes in stock of real property and residential contents. This regulation further establishes a consistent methodology and rationale for projections of future values of residential structures and contents upon which future unit flood damages are based.

§ 341.51 Policy.

(a) The affluence factor methodology, which is used to estimate unit flood damages, will be applied exclusively to existing and future residential categories. Furthermore, it is restricted to urban and urbanizing stream reaches; current and projected rural reaches will be excluded.

(b) The affluence factor methodology does not apply to intensification benefits and location benefits.

§ 341.52 Methodology.

The methodology for estimating future flood damage reduction benefits, as discussed in § 341.53 of this part, is predicated on an evaluation of the following specific types of data:

(a) Past, present and most probable future land utilization in the flood plain and nearby lands;

(b) Past, present and most probable future values of residential structures and contents in the flood plain. The relationship of values of residential structures to values of residential contents will be examined. This will enable the fundamental value relationship to serve as a guide in projecting content values and unit damages; and

(c) Past, present and most probable future unit flood damages.

§ 341.53 Affluence Factor Procedures.

The following subparagraphs prescribe the procedures to be followed in estimating future flood damage reduction benefits. The result is represented in the combining of the present and estimated number of residential units with the present and estimated adjusted future unit flood damages.

(a) *Step 1—Identification of Historical Flood Damage Data.* A thorough review of available flood damage surveys should be made to accomplish this step. The results of flood damage surveys and related studies, including the basis for the estimates, will be identified. The data contained in the damage surveys should be categorized into the general areas related to land utilization data, hydrologic data, and others as appropriate. Additionally, available economic data about real property values and contents value should be identified and displayed. Values will be expressed in constant dollars.

(b) *Step 2—Identification and Evaluation of Historical Land Utilization in Flood Plain and Nearby Lands.* Historical flood damage surveys should be reviewed with emphasis on identifying the timing, nature and extent of development in the flood plain and nearby land. To supplement information derived from historical flood damage surveys, local data sources should be investigated to identify historical information explaining the reasons the affected area developed. A reconnaissance of the flood plain may be helpful in completing and evaluating the historical data. The relevant information should be evaluated and displayed.

(c) *Step 2a—Assessment of Present Land Utilization in Flood Plain and Nearby Lands (Affected Area).* Present development and land use will be identified and categorized for the affected area. Existing characteristics of the flood plain will be delineated. Specific differences in characteristics of the flood plain as contrasted with nearby lands in the affected area will be identified.

(d) *Step 2b—Assessment of the Most Probable Future Land Utilization in the Flood Plain.*

(1) Relevant alternative sites will be examined for each activity which might use the flood plain with a given level of flood protection. The characteristics which provide the flood plain a comparative advantage over other sites will be specifically identified.

(2) Flood zoning regulations will be utilized in identifying shifts in the competitive position of the flood plain. This should be displayed as part of the assessment of land utilization in the affected area.

(3) The assessment of future land utilization will be displayed under the "with" and "without" project conditions. Future replacement of obsolete improvements will be accounted for in the assessment. The existence of flood plain management strategies and the Flood Disaster Protection Act of 1973 (Pub. L. 93–234) will be recognized in the assessment. The numbers of structures by type will be displayed for present and estimated future development as shown below:

Property type	Number							
	Existing	Future [4]						
		Po	P10	P20	P30	P40	P50	P100
Residential [1]	X	X	X	X	X	X	X	X
a [2]	X	X	X	X	X	X	X	X
b	X	X	X	X	X	X	X	X
c	X	X	X	X	X	X	X	X
Commercial [1]	X	X	X	X	X	X	X	X
Industrial [1]	X	X	X	X	X	X	X	X
Public [1]	X	X	X	X	X	X	X	X
Semipublic [1]	X	X	X	X	X	X	X	X
Recreational [3]	X	X	X	X	X	X	X	X
Agricultural [3]	X	X	X	X	X	X	X	X

[1] Report number of structures.
[2] Subclassification of residential units.
[3] Report number of acres.
[4] The designations P10 and P20, identify the 10th and 20th years, respectively, of project life

(e) *Step 3—Identification of Data on Value of Residential Structures and Value of Residential Contents.*

(1) *Existing Development.* The value of existing residential structures and residential contents in the flood plain will be identified separately for the base year. These values will be reported by reach for each category of residential property. The value of the structures reported will exclude the value of the land. Values will be expressed in terms of replacement cost less depreciation. The basis for determining initial content values will be a sample (informal survey not requiring OMB approval of questionnaire) taken in the flood plain and other information, as appropriate. The basis for the initial content values will be displayed in the report. All values will be expressed in constant dollars. A tabulation will be presented by flood plain reach showing for each general category of residential property the following data, which will be provided for the latest survey and the base year of project life:

(i) Number of structures.

(ii) Average value of structure.

(iii) Average value of contents.

(iv) Average value of contents as a percent of average structure value.

(v) *Initial Value of Future Development.* Estimates of the timing, general location, and type of future residential units evaluated in Step 2b will be displayed. The value of contents will be based on surveys of content value in analogous properties. For new development, the contents value will be based on the estimated value of contents in analogous properties at the time the new development is placed in the flood plain. The value will be displayed in a similar manner to that discussed in § 341.53(e)(1) of this part.

(f) *Step 3a—Application of OBERS Per Capita Income Projection to Existing Development in Future and Future Development.*

(1) *Existing Development.* The OBERS regional growth rate for per capita income will be used as the basis to increase the real value of residential contents in the future to account for the effects of the affluence factor. The value of the residential contents may be projected at the per capita income growth rate to a maximum level of 75 percent of the value of the residential structure. The projected increases will be limited to the first 50 years of project life. After the first 50 years the values will be held constant. In certain cases, it is recognized that the rate of change of per capita income in a particular area may seriously lag behind the OBERS rate. In such cases, a lesser rate of increase or a declining rate will be used. Such rate will be based upon historical, social and demographic variables.

(2) *Future Development.* The values of contents within new residential structures will be projected from the year each unit is added using the methodology described in § 341.53(f)(1) of this part. Values will be held constant after the first 50 years of project life. The initial value of contents and results of the procedure will be displayed separately.

(3) *Translation to Future Flood Damages.* The projected rate of increase in the value of flood-susceptible household contents will be used as the basis to increase the future unit flood damage to household contents in Step 4b.

(4) *Affluence Factor Effects for Commercial and Industrial Property.* The unit values of commercial and industrial property categories will not be increased over time using the affluence factor procedure described above. Increase in the values of commercial and industrial property in the flood plain may result from expansion of existing facilities as well as construction of new units and will be evaluated as new development units.

(g) *Step 4—Identification and Classification of Historical Unit Flood Damage Data.*

(1) The unit flood damages sustained from inundation referenced in Step 1 will be identified and examined. These flood damages are potential damages to activities affected by flooding at the time the study is undertaken. No projections of future changes in unit damages are considered in this step. This chapter requires the specification of unit damages. The provisions of para 4–10 specify the display of total flood damages.

(2) The unit physical flood damages or losses will be specified by general property type. The flood damage to contents will be specified separately from the flood damage to structure.

(h) *Step 4a—Estimation of Unit Damages for Existing Development in the Future and New Development in the Future.*

(1) Prior to considering future flood damages, the nature of the flood problem will be defined. The alternative plans of solution will be identified and discussed.

(2) The potential levels of future unit flood damage for existing development will be evaluated for each of the plans. Alternative plans for flood protection will be analyzed under "with project" and "without project" conditions.

(3) The potential levels of unit flood damages to future development will be evaluated. Alternative plans for flood protection will be analyzed under "with project" and "without project" conditions. The without Corps project condition will be considered "with" and "without" flood plain management (FPM) strategies (ER 1165–2–303). The provisions of the Flood Disaster Protection Act of 1973 (Pub. L. 93–234), will be recognized in analyzing future levels of unit flood damages.

(i) *Step 4b—Application of "Affluence Factor" to Unit Flood Damages Obtaining Adjusted Unit Flood Damages.*

(1) The historical flood damages and undiscounted future unit flood damages will be displayed by type of residential property. This data will be displayed to the extent possible for the historical period. In addition, the data will be displayed for current time (PN) and the first year of project life (Po). The estimated future unit damages will be reported for the 10th, 20th, 30th, 40th, 50th and 100th years of project life. The designations of P10, P20, P50 identify the 10th, 20th and 50th years of project life. This data will be displayed using the categories shown in the following tabulation.

Property type	Existing unit flood damages under existing conditions				Projected unit flood damages (without affluence factor)						
	P-30	P-20	P-10	PN	Po	P10	P20	P30	P40	P50	P100
Residential	X	X	X	X	X	X	X	X	X	X	X
a[1]	X	X	X	X	X	X	X	X	X	X	X
b	X	X	X	X	X	X	X	X	X	X	X
c	X	X	X	X	X	X	X	X	X	X	X

[1] Subclassification of residential units.

(2) A second tabulation will be included similarly displaying the incremental unit residential damages derived from the affluence factor. The application of the affluence effect will be documented.

(3) A third tabulation will display the sum of the two preceding tabulations by subclassification for the residential property type and unit damage. This third tabulation will be labeled Unit Flood Damages With Adjustment For Affluence Factor.

(j) *Step 4c—Combining Development Units From Step 2b with Adjusted Flood Damages from Step 4b to Obtain Total Adjusted Flood Damages.*

(1) To accomplish this step, adjusted unit flood damages are combined with estimated number of development units. This combination establishes the damage condition without the flood control project in place. The combined data will be displayed as outlined in the following tabulation.

Physical flood losses reported by property type	Average annual damage under existing conditions	Projected total future flood damages including effects of affluence factor						
		Fo	P10	P20	P30	P40	P50	P100
Residential	X	X	X	X	X	X	X	X
a[1]	X	X	X	X	X	X	X	X
b	X	X	X	X	X	X	X	X
c	X	X	X	X	X	X	X	X
Commercial [2]	X	X	X	X	X	X	X	X
Industrial [2]	X	X	X	X	X	X	X	X
Public [2]	X	X	X	X	X	X	X	X
Semipublic [2]	X	X	X	X	X	X	X	X
Recreational [2]	X	X	X	X	X	X	X	X
Agricultural [2]	X	X	X	X	X	X	X	X
Business and financial losses [1]	X	X	X	X	X	X	X	X
Emergency costs [1]	X	X	X	X	X	X	X	X

[1] Subclassification of residential units.
[2] Basic data developed from implementing the procedures contained in chs. 3 and 4. This includes analyzing the conventional hydrologic relationship.
NOTE.—Total average annual damages (for all categories).

(2) Appropriate hydrologic information will be used to estimate the "with" project conditions Pertinent curves will be displayed covering stage, frequency, discharge and damage relationships.

(3) A second tabulation will be included displaying the residual damages which are estimated with the recommended flood control project in place.

(4) A third tabualtion will include a display of the flood control benefits which would result with the recommended project in place, as follows:

Average annual benefits resulting from the recommended project in place

Benefits resulting from:	
Reduction of physical flood losses	X
Reduction of business and financial losses	X
Reduction of emergency costs	X
Intensification	X
Location	X
Total	X

APPENDIX A

STUDY OF INCOME AND VALUE OF HOUSING CONTENT STOCK

1. The purpose of this appendix is to report the findings of a recently completed OCE study. The study objective was to examine the empirical relationship between household income and values of household content stock. This study was conducted to examine flow to stock relationship for information to develop "affluence factor" evaluation procedures.

2. Summary of Study Procedures. The procedure which was followed is outlined in the following steps.

a. A base was established to compare changes in the value of household content stock with changes in income. Since income flow data is readily available, survey priorities were focused on identifying the value of residential content stock. To verify the availability of residential content stock data, public and private sources were surveyed. The survey included organizations which: (1) Gather data on household contents and their value, (2) conduct studies related to household formation and contents, (3) have interests related to household contents and therefore maintain secondary reference material. Pursuit of these organizations yielded the following:

(1) The source of the most relevant data is the July issue of the Survey of Current Business (SCB). This is published monthly by the Bureau of Economic Analysis (BEA), Department of Commerce. The BEA was formerly known as the Office of Business Economics (OBE). Estimates of national consumer expenditure data are reported annually in this publication. A summary of this expenditure data is presented in Table 1 for the period from 1953 to 1972. These data have been used by BEA to construct stock estimates for the significant categories of consumer durable goods. Table 2 presents BEA data on net stocks of consumer durable goods for the period from 1946–1969. Furniture and household equipment (Table 2, Column 1) has been selected for inclusion in residential content stock. Automobiles and other durable goods have been excluded because major components of these categories contain statistical bias. Time constraints prevented further research in this area. The furniture (Table 2, Column 1) was examined further as one component of content stock.

(2) The data on furniture was supplemented with estimated value of stocks of food, clothing and other non-durables. The source was Survey of Current Business expenditure data. The values of these stocks were summed to obtain the remainder of the constructed category of residential contents. For the purposes of this study, household contents is represented as the total of the following categories:

(a) Furniture and Household Equipment (Furniture).

(b) Food and Beverages (Food). This excludes purchased meals and beverages component.

(c) Clothing and Shoes (Clothing).

(d) Other Non-Durable Goods (OND).

These categories represent over 83 percent of the total durable and non-durable stock per household excluding automotive. The actual percentage is higher since the Other Durables category, excluded here, would not all be residential contents. Data on the value of the average stock of residential contents per household is presented in Table 3.

3. The procedure which was used in the estimation of stocks is shown below:

a. Furniture and Household Equipment. (From BEA).

(1) Categories were established for similar groups of durables.

(2) An average life was assigned to each category.

(3) The expected lives were distributed around the average.

(4) The expenditure in each category (constant dollars) was recorded.

(5) The stock was aged one year.

(6) The value of stock retired during that year was subtracted. The value of new stock purchases was added.

(7) The gross stock computed in (4) thru (6) above were depreciated. (Straight-line depreciation).

b. Food. The stock at any time was assumed to be 1/26 the total annual expenditures (2 weeks supply).

c. Clothing. A 3-year life was assumed using 65% depreciation in year 1, 25% in year 2 and 10% in year 3.

d. Other Non-Durables. OND were assumed to have a 2 month life and expenditure data treated accordingly.

4. Net values of consumer good stocks were divided by the total number of households for each year. This was done for the period 1955–1969. All values were in 1958 constant dollars. This provided average values of the stock of goods per unit over time. These compared with average values of existing single family housing and average income per household. The comparisons showed that net values per unit of both contents and income increased. It was also found that the average real value of housing (without land) did not change significantly over time. For further details see Appendix D. Thus the correlation between changes in residential structure value was insignificant. The real values of household income and value of net household content stock have shown a more significant correlation. The average rate of increase in net value of household content stock has exceeded that for household income. The average annual percent change in the average real household income was 2.4 percent over the period from 1955 to 1969. The average annual percent change in the net value of the average residential content stock per houshold was 3.1 percent over the same period.

5. Other references utilized in this study include:

a. The National Wealth of the United States in the Postwar Period by Raymond W. Goldsmith. This publication contained data on stocks of consumer durables for 1958 and earlier years. Attempting to update his data based on rates of change in expenditure did not appear to be justifiable. This is because of the uncertainty as to the change in the mix of the stock of durables since 1958.

b. "The Stock of Durable Goods in the Hands of Consumers, 1946–1969," article written by Henry Shavell and published in the Proceedings of the Business and Economics Section, American Statistical Association, 1970.

c. Contact was made with the following organizations:

(1) Insurance company spokesmen provided information on their experiences in handling fire insurance claims. This information revealed that the value of residential contents will average between 20 and 25 percent of the residential structure value. This is valid for residential structures up to about $135,000.00 in value. For residential structures above $135,000.00, the proportion of the contents as related to the value of residential structure increases significantly. They revealed that only a limited amount of empirical work has been done on evaluating the stock of household contents.

(2) Representatives of relevant trade associations were asked about availability of primary data on stock of individual household content items. Available information was inconclusive. The most readily volunteered data was on national expenditures and cost of individual items; it was of limited usefulness.

TABLE 1.—*Personal consumption expenditures—United States*

[Billions of 1958 dollars]

Year	A Furniture and household equipment	B Other durables	C Food and beverages	D Clothing and shoes	E Other nondurables	F Housing	G Autos and parts	H Total personal consumption expenditures
1953	15.0	4.2	68.4	22.9	24.6	32.3	16.0	250.8
1954	15.3	4.4	69.4	22.8	24.5	33.9	15.7	255.7
1955	17.1	4.8	72.4	24.0	25.8	35.7	21.2	274.2
1956	17.9	5.2	74.8	24.6	26.8	37.4	17.9	281.4
1957	17.4	5.3	76.2	24.4	27.5	39.2	18.8	288.2
1958	17.1	5.4	76.4	24.7	28.2	41.1	15.4	290.1
1959	18.8	5.9	79.7	26.1	29.6	42.9	19.0	307.3
1960	18.7	6.2	80.9	26.6	30.4	44.9	20.0	316.1
1961	19.2	6.4	82.3	26.9	31.9	46.6	18.4	322.5
1962	20.5	6.8	83.9	28.4	33.4	49.1	21.8	338.4
1963	22.3	7.3	85.2	29.1	34.9	51.8	24.8	353.3
1964	25.2	8.2	88.7	31.6	36.5	54.8	25.6	373.7
1965	27.4	8.8	92.1	33.4	38.7	58.1	30.4	397.7
1966	30.5	10.3	94.2	36.4	41.1	60.8	31.0	418.1
1967	31.5	10.7	95.9	36.6	42.2	63.5	30.6	430.1
1968	33.4	11.4	98.7	37.8	43.8	66.6	36.5	452.7
1969	35.2	12.1	98.9	38.8	45.8	69.9	38.3	469.1
1970	36.9	12.6	101.2	39.1	47.5	72.6	34.4	477.5
1971	38.4	12.6	103.6	40.7	47.8	75.1	41.3	496.3
1972	43.4	13.7	105.7	43.4	50.9	77.6	47.0	526.8
Average annual percent change (rounded) from 1953 to 1972	5.8	6.4	2.3	3.5	3.9	4.7	5.9	4.0

Sources:
1953–61—"Survey of Current Business" (SCB), August 1965.
1962—SCB, August 1966.
1963–64—SCB, August 1967.
1965—SCB, August 1969.
1966—SCB, August 1970.
1967—SCB, August 1971.
1968—SCB, August 1972.
1969–72—SCB, August 1973.

TABLE 2.—*Preliminary data, net stocks of consumer durable goods average life, L–2 survival patterns, using straight-line depreciation 1946–69*

[Billions of 1958 dollars]

Year	Furniture and household equipment [1]	Other durable goods [2]	Automotive [3]
1946	44.0	12.9	19.6
1947	48.8	14.1	22.0
1948	53.6	15.1	25.0
1949	57.4	15.7	30.0
1950	62.9	16.4	37.2
1951	66.8	17.0	41.8
1952	70.1	17.7	44.8
1953	73.4	18.4	50.5
1954	76.4	19.1	55.0
1955	80.6	20.1	62.6
1956	84.8	21.4	65.6
1957	88.0	22.5	68.2
1958	90.3	23.4	67.4
1959	93.8	24.8	69.0
1960	96.6	26.1	70.8
1961	99.4	27.4	70.4
1962	103.0	28.8	72.2
1963	107.7	30.5	75.9
1964	114.4	32.7	80.5
1965	122.2	35.1	88.6
1966	131.7	38.4	96.9
1967	140.8	41.7	103.7
1968	150.5	45.0	113.4
1969	160.0	47.9	122.5

[1] Composed of (a) furniture, including mattresses and bedsprings; (b) kitchen and other household appliances; (c) china, glassware, tableware, and utensils; (d) other durable house furnishings; (e) radio and television receivers, records, and musical instruments.
[2] Composed of (a) ophthalmic products and orthopedic appliances; (b) wheel goods, durable toys, sport equipment, boats and pleasure aircraft; (c) books and maps; (d) jewelry and watches.
[3] Composed of passenger cars and other automotive.

Source: Unpublished data, Bureau of Economic Analysis, Office of Business Economics, U.S. Department of Commerce.

6. Conclusion. It was concluded that the rate of change of local real household income would be a reasonable proxy for the rate of change of local net real value of household content stock over time. The permissible increase in the projected net real value of the content stock must be limited to preclude projections being made to excessive levels. For instance, it would seem unrealistic for the net real value of the content stock to exceed the real structural value of the residence in the majority of cases.

TABLE 3.—*Value of average stock of residential contents per household for the United States, 1955–69*

[1958 constant dollars]

Year	Food	Clothing	Other nondurables	Furniture and household equipment	Total
1955	46	294	89	2,102	2,531
1956	47	299	91	2,172	2,609
1957	46	296	92	2,221	2,655
1958	48	291	93	2,251	2,683
1959	49	298	95	2,305	2,747
1960	47	299	96	2,324	2,766
1961	47	301	99	2,370	2,817
1962	48	308	101	2,410	2,882
1963	47	313	105	2,504	2,969
1964	48	329	108	2,627	3,112
1965	49	342	112	2,743	3,246
1966	50	363	117	2,929	3,459
1967	51	372	119	3,104	3,646
1968	50	371	120	3,237	3,778
1969	49	374	122	3,359	3,904
Average annual percent change (rounded) from 1955 to 1969	0.4	1.8	2.3	3.4	3.1

TABLE 4.—*Increases in income and number of households, 1955–69*

Year	A Number of households [1] (000,000)	B Total personal income [2] (billions of 1958 constant dollars)	C Per capita income [3] (1958 constant dollars)	D Average income per household [4] (1958 constant dollars)	E Median family income [5] (1972 constant dollars)
1955	47.9	335.1	1,788	6,996	6,898
1956	48.9	351.3	1,831	7,184	7,357
1957	49.7	359.4	1,836	7,231	7,365
1958	50.5	361.2	1,823	7,152	7,353
1959	51.4	378.6	1,873	7,366	7,769
1960	52.8	389.8	1,883	7,383	7,941
1961	53.5	401.1	1,909	7,497	8,019
1962	54.7	421.9	1,968	7,713	8,247
1963	55.2	438.7	2,013	7,947	8,543
1964	56.0	463.2	2,123	8,271	8,861
1965	57.2	495.4	2,235	8,646	9,221
1966	58.3	526.4	2,331	9,060	9,667
1967	58.8	550.0	2,398	9,354	9,940
1968	60.4	581.3	2,480	9,624	10,381
1969	61.8	607.9	2,534	9,837	10,766
Average annual percent increase (rounded to nearest 10th) from 1955 to 1969	1.8	4.3	2.5	2.4	3.3

[1] "A Guide to Consumer Markets," 1971–72, the Conference Board, p. 46.
[2] Computed from "Survey of Current Business" data, July issues.
[3] "Survey of Current Business," July issues.
[4] Col. B divided by col. A.
[5] Economic Report of the President, February 1974, table C–22, p. 274.

APPENDIX B

STUDY OF RELATIONSHIP OF FLOWS TO VALUE OF STRUCTURAL HOUSING STOCK

1. *Introduction.* This (appendix) discusses findings of research on trends in housing values over time and the relationship with income changes over time. This is a part of an effort to examine the relationship of an affluence factor such as income to values of structures (without land) over a historical time series. The evaluation of these relationships has been used as an important input to the recently developed procedure to evaluate affluence factor effects on future flood damages.

2. *General.* It was recognized that over time gains in real personal income had been achieved and the conversion of the flow of income to an increased ownership in real and personal property was a popular assumption. This study examines these assumptions both on the national level and on the metropolitan area level. A large part of the material in this study was taken from "FHA Trends", a quarterly publication of HUD. The principal source categories from this publication are annual total effective income, estimates of property value, and average site/average value ratio.

Study Findings. Lot values were separated out of the total property prices in order to focus on the value of the structure which is flood susceptible. The increasing ratio of site value to structure value is shown in the tabulation presented on the following page. This ratio has practically doubled in the U.S. from 1950 to 1973. Metropolitan areas show a great variation in this characteristic according to the demand and supply for land.

Site value ratios [1]

Year	United States	Kansas City, Mo.	Little Rock, Ark.	Louisville, Ky.	Phoenix, Ariz.	San Francisco, Calif.	St. Louis, Mo.	Washington, D.C.
1956	15.2	12.5	18.2	15.7	13.6	20.3	14.7	15.6
1957		13.5	18.9	17.4	14.3	21.0	15.7	17.0
1958	16.5	13.8	19.8	16.8	16.7	22.1	16.4	17.5
1959	17.9	14.2	19.9	17.6	17.9	23.3	17.2	18.3
1960	17.7	14.5	19.1	18.3	18.1	22.3	18.8	18.6
1961	18.3	15.8	20.3	18.0	18.9	23.3	18.2	19.3
1962	19.1	15.1	20.3	18.4	20.0	23.8	18.8	19.3
1963	19.7	15.8	20.8	19.1	21.1	23.4	20.3	19.7
1964	20.2	16.0	20.7	19.0	21.1	25.8	20.6	20.0
1965	20.9	16.6	20.9	19.3	21.2	28.2	20.3	20.4
1966	21.0	16.8	20.8	19.6	21.3	29.5	20.2	20.9
1967	21.5	17.1	20.5	19.4	21.3	30.5	19.5	22.0
1968	21.8	17.3	21.6	19.1	20.9	20.9	19.5	22.3
1969	21.3	17.3	20.9	19.5	21.1	31.0	18.7	22.1
1970	21.7	17.8		19.6	19.1	20.5	19.0	19.9
1971	20.8	17.2			19.9	31.2	18.8	22.1
1972	21.1	18.3	19.1	19.0	19.8	30.4	19.5	22.1

[1] Average site value ratio as a percent of single family residential value.

4. *Other Relevant Studies*

a. Studies concerning the filtering concept by James T. Little at the Institute for Urban and Regional Studies at Washington University have brought out significant facts concerning neighborhood land changes in values over time. These empirical studies separate out the short term market effects causing variations in housing prices and provide a price trend over time for various classes of residential structures on a metropolitan area wide basis. The study samples were obtained from individual FHA applications. The studies cover a large range and number of housing transactions thereby providing an excellent reference base for further investigations.

b. The work of Little points out the tremendous influence of the conversion (filtering) process. The process results in rapid changes in occupancy by social class on the neighborhood level within metropolitan areas. This multiplying effect resulting from the conversion process makes the prediction of housing value trends in small areas very speculative for a period of time beyond a few years.

5. *Major Findings.*

a. Based on annual figures from 1956 to 1972, the national real incomes of home buyers in the study increased by 14% while existing housing values declined, 57% for the nation as a whole. While the average real income of home buyers increased from approximately $7000 in 1956 to $8400 in 1972, the average structure value of existing houses sold declined in real value from approximately $11,300 to $10,000 over the same period. The pattern for each SMSA considered was in most cases similar, the rate of change of housing structure values staying (roughly 2%) below the rate of change in real income of purchasers.

b. Table 1 presents the statistical results of this study. This table presents annual figures for the U.S. and for seven metropolitan areas selected at random.

c. While the unpredictability of trends in the small area is very greatly affected by exogenous factors the overall secular trend of values in the metropolitan area is more stable and therefore more predictable.

d. Basic policy changes, changes in technology or market dislocations would be necessary to significantly change the long term trend in housing values.

e. F.H.A. is presently in the process of creating a computerized data file in which all information from housing applications will be listed. This is expected to further improve what is already the best source of primary data on residences available. This file, which will be kept current in the future should prove to be a good data reference district studies. Tables 2 and 3 are two examples of the types of information that will be included in these files. These tables are pages out of FHA Series Data Handbook.

6. *Conclusion.* While the statistics reported in this effort represent data on SMSAs it is not suggested that these trends would be indicative of the local project area. The conclusion can be drawn that the relationships of the selected economic parameters such as income to real values of structure should be tested separately for each local project area. Due to the dynamics of land development in metropolitan areas and the limit in practical commuting time for persons who travel to their place of work, the price of land has increased at a much greater rate than that of the structures built upon the land. Land has the capacity for increasingly more intensive use while the structure by its nature is limited in this respect. Site value ratios are published for all SMSA's in FHA Area Trends and range form a low for 1970 in Raleigh, North Carolina, of 13.1% to a high in Honolulu of 43.2%.

The trends indicate that housing improvements are offset by depreciation of the housing over the long term. This finding is compatible with filtering concept as defined by Wallace Smith "Filtering changes in house prices and rents must be measured by holding income, quality, and space per person constant or in a more relaxed form, that filtering occurs only when values decline more rapidly-than quality * * *" and an extension of this definition "Filtering has occurred if a household moves, independently of changes in its real income to a location with a preferred housing bundle" (1). Little extends this in the latter definition to indicate that families filter and not housing units. He also recognizes that this bundle includes, location, public sector, and neighborhood amenities in addition to physical structure.

TABLE 1.—House value [1] and income [2] (1958 dollars), U.S. and selected SMSA's 1956–72

Year	United States		St. Louis		Kansas City		San Francisco		Little Rock		Louisville		Washington, D.C.		Phoenix	
	House value	Income	House value	Income	House value	Income	House value	Income	House value	Income	House value	Income	House value	Income	House value	Income
1956	11,350	6,904	12,648	7,088	12,228	7,067	10,712	7,056	10,417	6,725	11,929	6,930	14,934	8,454	9,982	7,529
1957	11,173	6,953	11,537	6,763	11,299	6,822	11,165	7,798	9,784	6,699	11,552	7,198	14,539	8,298	10,013	7,354
1958	10,841	6,920	11,267	6,992	10,833	6,620	10,830	7,356	10,194	6,934	9,577	6,193	13,239	8,035	10,302	7,830
1959	10,672	6,974	11,049	6,997	10,730	6,621	10,777	7,428	9,404	6,752	10,137	6,332	12,641	8,075	10,246	8,073
1960	10,551	7,025	10,550	7,096	10,555	6,799	10,799	7,485	9,852	6,743	10,746	6,925	12,168	7,855	10,411	8,179
1961	10,691	7,131	11,419	7,157	10,767	6,821	11,457	7,787	9,610	6,767	10,051	6,563	12,636	8,126	10,156	8,102
1962	10,932	7,204	10,833	7,317	11,242	7,024	11,913	8,022	9,960	6,896	9,938	6,460	14,009	8,692	9,627	7,807
1963	10,884	7,255	10,329	7,182	11,239	7,153	12,039	7,989	9,813	6,999	9,622	6,472	14,063	8,958	9,622	7,728
1964	10,852	7,265	10,515	7,414	11,329	7,150	12,013	8,142	10,105	6,942	9,663	6,338	13,523	8,758	9,832	7,720
1965	11,006	7,413	10,604	7,414	11,362	7,302	11,979	8,309	10,144	7,126	9,879	6,460	13,999	8,897	9,807	7,722
1966	10,757	7,536	10,171	7,639	10,853	7,512	11,692	8,679	9,762	7,194	9,274	6,430	13,864	9,358	9,859	8,000
1967	10,864	7,985	10,269	8,110	10,788	7,997	11,725	9,101	10,422	7,811	9,717	6,965	14,479	10,112	9,884	8,141
1968	10,430	8,894	9,675	7,891	10,063	7,851	11,489	9,099	8,952	7,386	8,477	6,663	13,583	9,822	9,752	7,079
1969	10,091	8,113	9,371	7,997	9,512	8,215	11,309	9,521	8,206	7,486	8,433	7,344	13,262	10,268	9,512	7,980
1970	10,283	8,445	8,473	7,863	8,934	8,319	11,769	10,472	N.A.	------	8,076	7,604	13,995	11,026	11,181	9,096
1971	10,464	8,460	8,600	7,843	9,191	8,117	11,693	9,780	N.A.	------	N.A.	------	12,288	9,806	12,008	9,129
1972	9,835	8,384	7,660	7,339	8,987	8,218	11,505	9,910	8,055	7,240	7,753	7,654	13,602	10,673	11,264	9,172
Average annual rate of change in percent from 1956 to 1972 [3]	−0.57	1.41	−1.91	0.72	−1.38	1.31	0.48	2.19	−1.34	0.46	−1.88	0.88	−0.46	1.72	0.94	1.34

[1] Average value of property (lot excluded) (FHA)÷Consumer Price Index (Housing: Shelter) [1969 Business Statistics, Survey of Current Business].

[2] Income is average annual effective income as used by FHA. Data pertains to existing houses.

Sources: For United States, 1956–70: FHA RR251, p. 21b. RR251 covers January–September of each year. It is the basis of the FHA annual reports. United States, 1971–72: "FHA Trends" covers 12 mo. Data for 1971 and 1972 uses "monthly total effective income" (TEI) times 12. Data for 1973 is monthly TEI for (1st+2d+3d quarter÷3)×12. SMSA's: 1956–65, FHA Trends". 1966–69, Data for States and Selected Areas (RR: 250 Book: HUD SOR 3). Average monthly estimated effective income×12. 1970–72, Area Trends"—total effective monthly income. 1970–71—4th quarter. 1972—4th quarter except Kansas City is 2d quarter.

[3] In computing average annual rate of change 3-yr averages were used for base year (1957) and ending year (1971) reflecting a 14-yr period.

TABLE 3.—*Available market price of equivalent site as percent of property value, 1-family homes, sec. 203*

Year	New homes			Existing homes		
	Average		Ratio	Average		Ratio
	Site	Value		Site	Value	
1935	$1,129	$6,440	17.5	N.A.	$5,300	N.A.
1936	1,026	6,225	16.4	N.A.	5,244	N.A.
1937	913	5,978	15.3	N.A.	5,170	N.A.
1938	785	5,530	14.2	$1,010	5,069	19.9
1939	724	5,352	13.5	956	5,030	19.0
1940	662	5,199	12.7	948	5,179	18.3
1941	649	5,238	12.4	981	5,400	18.2
1942	635	5,385	11.8	935	5,568	16.8
1943	N.A.	N.A.	------	956	5,844	16.4
1944	N.A.	N.A.	------	924	5,809	15.9
1945	N.A.	N.A.	------	857	5,835	14.7
1946	761	6,597	11.5	833	6,269	13.3
1947	893	7,817	11.4	915	7,190	12.7
1948	1,049	8,965	11.7	970	8,075	12.0
1949	1,018	8,753	11.6	1,098	9,093	12.1
1950	1,035	8,594	12.0	1,150	9,298	12.4
1951	1,092	9,307	11.7	1,222	10,147	12.0
1952	1,227	10,245	12.0	1,296	10,567	12.3
1953	1,291	10,357	12.5	1,461	11,419	12.8
1954	1,456	11,120	12.1	1,591	11,934	13.3
1955	1,626	12,118	13.4	1,707	12,047	14.2
1956	1,887	13,399	14.1	1,931	12,756	15.1
1957	2,148	14,464	14.9	2,041	13,028	15.7
1958	2,223	14,394	15.4	2,150	13,069	16.5
1959	2,362	14,650	16.1	2,369	13,236	17.9
1960	2,470	14,899	16.6	2,356	13,304	17.7
1961	2,594	15,167	17.1	2,513	13,705	18.3
1962	2,715	15,489	17.5	2,738	14,323	19.1
1963	2,972	16,222	18.3	2,874	14,542	19.8
1964	3,113	16,548	18.8	2,987	14,791	20.2
1965	3,427	17,190	19.9	3,219	15,394	20.9
1966	3,589	17,974	20.0	3,295	15,631	21.2
1967	3,766	18,970	19.9	3,504	16,286	22.0
1968	4,128	19,972	20.7	3,617	16,453	22.0
1969	4,277	21,036	20.3	3,717	17,165	21.7
1970	4,952	23,559	21.0	3,973	18,519	21.5

N.A.—Not available.
Also see table 58.

Source: Department of Housing and Urban Development; Housing Production and Mortgage Credit—FHA; Division of Research and Statistics; Statistics Branch.

TABLE 2.—*Housing statistics—Characteristics of 1-family home transactions, sec. 203*

Characteristics of existing homes	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952
Typical 1-family characteristics—median:																		
Amount of mortgage	$3,345	$3,413	$3,361	$3,540	$3,547	$3,687	$3,847	$4,076	$4,312	$4,317	$4,369	$4,697	$5,363	$5,969	$6,778	$6,801	$7,448	$8,047
Estimated value	N.A.	$4,673	$4,705	$4,902	$4,540	$4,600	$5,004	$5,272	$5,535	$5,484	$5,511	$5,954	$6,769	$7,579	$8,700	$8,865	$9,843	$10,289
Loan/value ratio (percent)	73.1	74.5	76.4	76.4	76.6	76.8	79.5	N.A.	N.A.	N.A.	78.3	78.4	78.2	77.9	78.0	77.6	76.6	77.9
Improved floor area (square feet) [1]	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	972	1,001	1,006	1,011	992
Annual effective income	N.A.	$2,470	$2,485	$2,509	$2,501	$2,490	$2,473	$2,751	$3,062	$3,120	$3,118	$3,101	$3,614	$3,731	$4,219	$4,274	$4,726	$4,938
Total mortgage payment	N.A.	$27.21	$28.42	$26.20	$24.96	$24.51	$35.91	$37.80	N.A.	$39.45	$39.21	$40.35	$45.25	$49.76	$56.12	$56.65	$61.57	$65.06
Monthly housing expense	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$54.91	N.A.	N.A.	$56.17	$58.09	$64.27	$71.60	$78.23	$78.99	$84.70	$86.63
1-Family transactions—percent/average:																		
Term of mortgage (years)	16.0	16.2	16.5	16.3	16.9	17.3	17.8	18.1	18.3	18.0	18.3	18.9	19.1	19.3	19.8	20.2	21.1	19.7
Improved floor area (square feet) [1] [2]	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1,075	1,091	1,106	1,093	1,060
Number of rooms	N.A.	N.A.	N.A.	6.1	5.9	5.9	5.9	5.9	5.9	5.9	6.0	5.5	5.3	5.2	5.2	5.2	5.2	5.1
Number of bedrooms	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2.5	2.6
With basement	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
With garage	N.A.	N.A.	N.A.	87.3	88.1	87.2	86.8	85.5	85.8	84.2	82.3	83.4	73.1	70.5	70.4	70.6	69.5	70.7
With carport																		
With more than 1 bath	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
With 1 story	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Owner occupant transactions—Average:																		
Monthly family income	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Monthly total effective income	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$359	$395	$403	$431	$452
Effective income after tax	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$360	$366	N.A.	N.A.
Age of mortgagor (years)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Real estate taxes	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$9.30	$9.28	$9.15	$9.00	$8.46	$7.34	$7.37	$7.68	$8.86	$9.28	$9.62	$9.82
Total mortgage payment	N.A.	$31.00	$31.44	$29.28	$27.60	$27.08	$39.50	$40.75	$42.58	$42.91	$42.31	$43.25	$47.53	$52.18	$58.38	$58.94	$61.98	$65.65
Maintenance and repair	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Heating and utilities	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Prospective housing expense	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$58.60	$60.75	$61.53	$60.53	$61.48	$66.94	$73.19	$80.90	$81.62	$83.69	$87.56
Other recurring charges	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Total fixed obligations	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Purchase transactions—Average:																		
Total acquisition cost	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$11,351	$11,689
Sale price	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$10,777	$11,484
Incidental cost	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$574	$205
Estimated value	N.A.	$5,244	$5,170	$5,069	$5,030	$5,179	$5,400	$5,568	$5,844	$5,809	$5,835	$6,269	$7,190	$8,075	$9,093	$9,298	$10,147	$10,424
Amount of mortgage	$3,740	$3,756	$3,615	$3,825	$2,823	$3,977	$4,129	$4,298	$4,566	$4,586	$4,614	$4,929	$5,561	$6,181	$6,969	$7,102	$7,469	$8,062
Market price of site	N.A.	N.A.	N.A.	$1,010	$956	$948	$981	$985	$956	$924	$857	$813	$915	$970	$1,098	$1,150	$1,122	$1,296
Annual effective income	N.A.	$3,054	$3,014	$3,210	$3,029	$3,012	$3,011	$3,229	$3,505	$3,539	$3,514	$3,640	$3,941	$4,308	$4,742	$4,837	$5,176	$5,429
Mortgager's investment	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$3,882	$3,627
Site value (%)	N.A.	N.A.	N.A.	19.9	19.0	18.3	18.2	16.8	16.4	15.9	14.7	12.3	12.7	12.0	12.1	12.4	12.6	12.4
Investment/acquisition cost (%)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	34.2	31.9
Investment/effective income (%)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	75.0	68.7
Mortgage/acquisition cost (%)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	65.8	69.0
Mortgage/value (%)	N.A.	71.6	69.9	75.5	76.0	76.8	76.5	77.2	78.1	78.9	79.1	78.6	77.3	76.5	76.6	76.4	73.6	77.3

TABLE 2.—*Housing statistics—Characteristics of 1-family home transactions, sec. 203*

Characteristics of existing homes	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Typical 1-family characteristics—Median:																		
Amount of mortgage	$8,623	$9,080	$9,608	$10,013	$10,498	$11,325	$11,755	$11,978	$12,469	$13,100	$13,406	$13,725	$14,232	$14,322	$14,994	$15,250	$15,690	$16,590
Estimated value	$11,061	$11,549	$11,555	$12,261	$12,572	$12,778	$12,914	$13,043	$13,474	$14,082	$14,342	$14,614	$15,128	$15,148	$15,828	$16,081	$16,617	$17,773
Loan/value ratio	78.3	78.5	84.8	82.9	84.9	90.2	92.0	92.6	93.6	94.4	94.6	94.8	94.4	95.2	95.1	95.2	95.1	94.3
Loan/value ratio (percent)																		
Improved floor area [1 2] (square feet)	1,008	1,035	1,060	1,060	1,060	1,053	1,059	1,057	1,077	1,099	1,106	1,118	1,131	1,086	1,126	1,101	1,103	1,105
Annual effective income	$5,396	$5,696	$5,669	$6,033	$6,296	$6,502	$6,575	$6,784	$6,971	$7,185	$7,295	$7,325	$7,580	$7,904	$8,768	$9,076	$9,750	$10,761
Total mortgage payment	$70.84	$74.34	$74.81	$78.67	$85.54	$90.30	$91.66	$96.50	$98.48	$100.90	$103.77	$106.53	$110.77	$114.16	$124.56	$130.32	$143.84	$164.33
Monthly housing expense	$93.25	$97.41	$97.49	$102.16	$110.12	$115.31	$116.26	$121.41	$124.39	$127.39	$130.87	$134.91	$140.90	$145.72	$157.60	$163.76	$178.08	$199.59
1-Family transactions—percent/average:																		
Term of mortgage.....years	19.9	20.1	22.7	22.5	22.5	24.2	25.1	25.8	26.7	27.4	27.9	28.4	28.6	28.4	28.5	28.4	28.8	28.8
Improved floor area [1 3] (square feet)	1,075	1,104	1,096	1,117	1,115	1,105	1,105	1,101	1,126	1,145	1,150	1,166	1,181	1,135	1,258	1,243	1,242	1,236
Number of rooms	5.1	5.2	5.2	5.3	5.3	5.4	5.4	5.4	5.4	5.5	5.4	5.5	5.6	5.7	5.7	5.7	5.7	5.7
Number of bedrooms	2.5	2.6	2.6	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9
With basement	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	44.8	47.6	44.7	40.8	39.0	39.8	39.1	44.8	43.5	44.3	42.9	43.2
With garage	74.1	79.6	79.9	81.1	78.5	74.4	66.2	61.9	63.5	66.4	64.3	64.4	65.3	64.4	63.4	64.4	61.8	61.7
With carport						.5	7.8	9.5	10.2	9.1	12.2	12.6	13.2	13.7	14.5	12.7	13.9	13
With more than 1 bath	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	24.3	23.5	27.5	31.7	32.6	35.5	37.5	38.8	42.6	40.0	39.8	40.5
With 1 story	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	77.9	75.8	77.3	79.6	80.4	80.7	80.3	74.8	74.1	72.4	74.0	75.6
Owner occupant transactions—average:																		
Monthly family income	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$645	$661	$679	$698	$716	$736	$764	$782	$848	$872	$937	$1,028
Monthly total effective income	$495	$520	$519	$549	$571	$581	$592	$605	$621	$636	$645	$656	$679	$709	$774	$797	$856	$946
Effective income after tax	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$528	$538	$556	$560	$569	$586	$613	$638	$688	$707	$750	$819
Age of mortgagor (years)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	34.8	34.1	34.1	34.5	34.1	33.6	33.4	33.0	33.4	33.4	33.2	33.1
Real estate taxes	$10.87	$11.65	$12.12	$12.48	$14.21	$14.59	$14.72	$15.55	$16.60	$18.00	$19.26	$20.16	$21.70	$22.53	$24.43	$25.66	$26.43	$29.39
Total mortgage payment	$72.79	$77.10	$77.15	$81.24	$88.17	$93.07	$94.18	$98.69	$100.73	$102.73	$105.13	$107.45	$112.02	$116.29	$127.43	$132.92	$1147.83	$170.56
Maintenance and repair	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$7.46	$7.17	$7.22	$7.50	$7.72	$8.03	$8.59	$8.98	$9.44	$9.56	$10.01	$10.91
Heating and utilities	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$17.67	$18.73	$19.40	$19.76	$20.15	$21.17	$22.46	$23.43	$24.81	$24.77	$25.33	$28.51
Prospective housing expense	$95.71	$100.71	$100.58	$105.16	$113.47	$118.47	$119.31	$124.60	$127.35	$129.99	$133.00	$136.64	$143.07	$148.70	$161.68	$167.25	$183.17	$207.98
Other recurring charges	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$52.83	$56.03	$62.11	$66.67	$73.71	$80.36	$84.72	$94.80	$103.57	$108.70	$118.86	$128.61
Total fixed obligations	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	$172.14	$180.63	$189.46	$196.66	$206.71	$217.00	$227.79	$243.50	$265.25	$275.95	$302.03	$336.59
Purchase transactions—average:																		
Total acquisition cost	$12,217	$12,578	$12,558	$13,274	$13,507	$13,446	$13,560	$13,579	$13,937	$14,507	$14,684	$14,909	$15,437	$15,501	$16,318	$16,497	$17,227	$18,402
Sale price	$12,018	$12,344	$12,281	$12,991	$13,201	$13,138	$13,278	$13,284	$13,630	$14,184	$14,346	$14,540	$15,037	$15,139	$15,933	$16,106	$16,814	$17,959
Incidental cost	$199	$234	$277	$283	$306	$313	$261	$277	$283	$292	$294	$309	$330	$337	$360	$370	$396	$428
Estimated value	$11,352	$11,919	$11,949	$12,684	$12,962	$13,023	$13,180	$13,268	$13,661	$14,270	$14,490	$14,782	$15,390	$15,479	$16,247	$16,426	$17,123	$18,260
Amount of mortgage	$8,917	$9,398	$9,952	$10,281	$10,774	$11,531	$11,895	$12,047	$12,544	$13,208	$13,475	$13,768	$14,286	$14,452	$15,151	$15,337	$15,938	$16,821
Market price of site	$1,461	$1,591	$1,707	$1,931	$2,041	$2,150	$2,357	$2,354	$2,503	$2,721	$2,850	$2,981	$3,218	$3,254	$3,475	$3,597	$3,696	$3,949
Annual effective income	$5,911	$6,253	$6,177	$6,536	$6,814	$6,908	$7,079	$7,243	$7,431	$7,598	$7,741	$7,858	$8,147	$8,497	$9,270	$9,559	$10,274	$11,269
Mortgagor's investment	$3,300	$3,180	$2,606	$2,993	$2,733	$1,915	$1,665	$1,532	$1,393	$1,299	$1,209	$1,146	$1,151	$1,049	$1,167	$1,160	$1,289	$1,581
Site value (percent)	12.9	13.3	14.3	15.2	15.7	16.5	17.9	17.7	18.3	19.1	19.7	20.2	20.9	21.0	21.4	21.9	21.6	21.6
Investment/acquisition cost (percent)	27.0	25.3	20.8	22.5	20.2	14.2	12.3	11.3	10.0	9.0	8.2	7.7	7.5	6.8	7.2	7.0	7.5	8.6
Investment/effective income (percent)	55.8	51.0	42.2	45.8	40.1	27.5	23.5	21.2	18.7	17.1	15.6	14.6	14.1	12.3	12.6	12.1	12.5	14.0
Mortgage/acquisition cost (percent)	73.0	74.7	79.2	77.5	79.8	85.8	87.7	88.7	90.0	91.0	91.8	92.3	92.5	93.2	92.8	93.0	92.5	91.4
Mortgage/value (percent)	78.6	78.8	83.3	81.1	83.1	88.5	90.3	90.8	91.8	92.6	93.0	93.1	92.8	93.4	93.3	93.4	93.1	92.1

N.A.—Not available.

[1] 1966 through 1970 data based on 1-story structures.

[2] Effective June 1966 a new concept of house measurement was instituted by FHA. It is described in a pamphlet entitled "How FHA Measures a House". Improved floor area is shown for 1967 through 1970 and is used in the former measurement, "calculated area".

[3] All structures.

Source: FHA Series Data Handbook, Department of Housing and Urban Development, RR:251, p. 2B:

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